

**Intermodalism: Hiawatha Light Rail Transit Line and the
Minneapolis-St. Paul International Airport**

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by

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Introduction

The Hiawatha Light Rail Transit (LRT) line is Minnesota's first LRT line, and the first rail transit line in the state since 1954. Revenue service began June 26, 2004, linking downtown Minneapolis to the Fort Snelling park-and-ride lot. The line was completed December 4, 2004, when the section from Fort Snelling through the Minneapolis-St. Paul International Airport to Mall of America in Bloomington opened. The line is 11.8 miles and contains 17 stations and operates in the cities of Minneapolis and Bloomington and the Fort Snelling complex.

Hiawatha LRT is owned and operated by Metro Transit, an agency of the Metropolitan Council, a seven-county regional planning agency appointed by the Governor with responsibility for regional planning and operation of the metropolitan sewage treatment facilities and the regional transit system. Officially designated Route 55, the light rail line is part of Metro Transit's network of local, limited stop, and express buses. Connections to buses can be made at 13 of the line's 17 stations.

The Hiawatha Line has been a tremendous success both quantitatively and qualitatively. In less than two years of service, it has become Metro Transit's most heavily traveled route, now carrying over 10 percent of all Metro Transit riders. Ridership on the line has consistently and significantly exceeded official projections. Ridership in 2005 was 7.9 million, 58 percent above pre-construction estimates (Source: Metro Transit). Ridership has continued to greatly exceed projections in 2006. According to a recent survey, 52 percent of LRT riders are new to transit since Hiawatha opened (Source: Metro Transit Periscope Survey).

The qualitative response has been equally strong. In a recent survey of LRT riders, 93 percent agreed or strongly agreed with the statement: "I am satisfied with Metro Transit Service." In summary: People enjoy the ride; they enjoy the experience; and they want to know when additional lines will be built to allow them to travel to other parts of the region.

The follow chart summarizes the means by which LRT riders are getting to the train and makes a strong case that intermodalism is alive and well on the Hiawatha Line:

How LRT Riders Got to the Train	Percentage of Riders
Driving to Park-and-Ride	45%
Taking a Bus	23%
Walking	16%
"Hide & Ride"	9%
Dropped Off	4%
Bike	3%

Source: Metro Transit

My comments will concentrate on the intermodal aspects of the Hiawatha Line's service to Minneapolis-St. Paul International Airport, while also providing an overview of the Line's history from the perspective of policy, institutional relationships, funding sources, and construction challenges.

While this line is receiving much attention for its success to date, the true measure of success will be its ability to inspire residents, elected officials, the business community, and community organizations to embrace a fully intermodal vision for transportation in the Twin Cities metropolitan area.

The Role of Intermodalism in the Vision for the Hiawatha Line

The opening of the Hiawatha LRT Line was the culmination of a 40-plus-year struggle to bring a multimodal approach in the Highway 55 Corridor, arguably before the term had been invented. This effort by elected officials, policymakers, the business community, and, most significantly, citizen advocates, quickly became tied to an effort to restore rail transit in the Twin Cities.

By the mid-1990's, momentum was growing for a light rail line. Originally envisioned as a six-lane freeway in a trench with four lanes of frontage road, the Highway 55 project had evolved into an at-grade, four-lane road with access and turns at some intersections, complemented by LRT. The highway was funded and under construction, but there was no viable plan to construct the parallel LRT line envisioned when residents shook hands on an agreement for the corridor with the State Department of Transportation in 1985.

I am pleased and proud of the leadership role that the Hennepin County Regional Railroad Authority took in advocating for LRT. Our partners included the business community of Minneapolis, Bloomington and St. Paul, which was instrumental in securing the initial state funding and commitment in 1998, during the administration of Governor Arne Carlson, and county railroad authorities from around the region. The subsequent state administration of Governor Jesse Ventura continued to provide support and funding. The Federal Transit Administration (FTA) entered into a full funding grant agreement for the project in 2001.

The primary arguments for the Hiawatha LRT Line were that the line would:

- Connect the four largest economic generators in the state: Downtown Minneapolis, University of Minnesota, Minneapolis-St. Paul International Airport, and Mall of America;
- Be the first rail transit line in the state and would be the catalyst for a comprehensive system of transitways in the metro area;
- Encourage economic development along the corridor;
- Provide the comfort and speed to encourage auto users to convert some of their auto trips to transit;
- Slow the growing traffic congestion and relieve pressure to build more lanes and parking facilities in the urban core;
- Improve air quality and save energy.

Intermodal connectivity was an important part of Hiawatha's design and success. While this report will concentrate on the connections at the airport, intermodalism has become a concept influencing all transportation projects proposed in the metro area. The following intermodal features of the Hiawatha Line provide insight into the possibilities for seamless connections throughout the region:

- Bus: Hiawatha LRT provides free transfers to buses operating in the region at 13 of the 17 stations. Many of the traditional routes serving south Minneapolis were re-routed to serve as feeders to the LRT. This sometimes necessitated a transfer not previously required, but in the vast majority of cases, it cut the total travel time and improved overall access. Numerous bus routes are also connected at the four stations in Downtown Minneapolis. Transit hubs at the 46th Street Station and Mall of America provide service radiating out into neighborhoods, bordering cities and the suburbs. The single biggest problem with use of the bus as a feeder is the lesser frequency of the buses compared to the trains, especially during rush hour. Seven-and-a-half minute rush hour headways on the LRT encourage ridership. Twenty- or thirty-minute headways for the buses that would take you from the train station to your home do not.

Another continuing issue is the lack of support from the Metro Council for a circulator bus system in Downtown Minneapolis that had been promised during the design phase of the LRT. This addition to regular Metro Transit service would provide enhanced connectivity to key locations in Downtown Minneapolis.

Finally, I'm proud to say that in my earlier life as a State Representative in the late 1980's I co-authored an amendment that required that Metro Transit operate any LRT line built in the region. This policy has reinforced the close operational linkage of the bus and rail systems and avoided unnecessary and unproductive conflicts. It is a cornerstone to successful intermodalism in the region.

- Biking: There are bike racks on every LRT vehicle, an innovation that came directly from the Line's citizen participation process. A bikeway runs parallel to Hiawatha

Avenue in Minneapolis, and popular east-west bikeways like the Midtown Greenway connect at the Lake Street/Midtown Station. The Minnehaha Creek Trail connects riders at the 50th Street/ Minnehaha Park Station to an array of bike trails into Dakota and Ramsey Counties. Fifty-four bike lockers at nine Hiawatha LRT stations are available for rent, complemented by outdoor bike racks at many of the stations.

Creation of bike paths in and around the airport has been difficult because of the size and security issues associated with the airport. It is our hope that the recently funded federal pilot project lead by Transit for Livable Communities, Nonmotorized Transportation Pilot Project, will provide even great impetus for bicycle and pedestrian connectivity and a mode switch from the automobile to bikes and transit. We appreciate the leadership of the House Transportation Committee in making this possible.

- Luggage racks on every LRT vehicle, provided with the airport user in mind.
- ADA Accessibility: Though not always incorporated in the definition of intermodalism, accessibility beyond full compliance with the Americans with Disabilities Act (ADA) was a major success of the Line. This benefits not only those with disabilities but parents pushing baby strollers, seniors and others.
- Automobiles: There are two major park-and-ride lots with over 1,800 spaces serving the south end of the line and plans for 900 more due to the heavy usage since their opening. Also, a smaller park-and-ride facility of 250 spaces is available at the Lake Street/Midtown station, serving the busy Lake Street corridor in the city of Minneapolis. No overnight parking is allowed, and the lots are monitored by Metro Transit police on a daily basis. They are an important source of riders of the LRT.

There are unintended consequences to being close to the LRT Line. Two major institutions with LRT stops, Mall of America and VA Medical Center, have experienced parking spaces taken up by LRT passengers. Both are close to official park-and-ride lots, and both actively discourage such parking.

Some neighborhoods in Minneapolis are dealing with a problem with another form of intermodality, “hide and ride,” i.e., people driving as close to a station as possible and parking. During the planning of the Hiawatha Line, the City of Minneapolis decided to bar any park-and-ride lots in the city (the park-and-ride spaces at Lake Street utilize existing parking in cooperation with property owners). Large parking lots were contrary to the City’s vision of transit-oriented development near the stations. Some homeowners are frustrated by the loss of parking on their street (though I am not among them despite having people park in front of my house every day). This is an aspect of multimodalism that needs to be managed in ways from parking enforcement, limitations on length of parking, permit parking, and construction of additional parking-and-ride facilities in conjunction with nearby developments.

- Walking: Hiawatha Avenue is wide. It is paralleled by an active freight line that historically served a number of large grain mills and elevators. Most of these are now inactive, but they remain a large, looming physical presence on much of the east side of the line. Thus, while many of the Hiawatha LRT stations are easily reached on foot, the historic environment is far from friendly to pedestrians.

Efforts are ongoing in conjunction with neighborhood organizations, the cities of Minneapolis and Bloomington and business interests to improve the pedestrian environment. This is a major undertaking. A number of re-development plans are in the works. Hennepin County has provided station area planning grants to assist the neighborhoods in articulating their vision for the future, a vision that can now confidently incorporate the LRT line after literally 40 years of uncertainty about the nature of the transportation infrastructure. The County and City have also worked together to make investments in the pedestrian realm: lighting, signs, better sidewalks, etc. This is major undertaking. We are literally trying to move from an auto-oriented urban design to one inspired by transit and the other alternatives in an urban setting.

- Commuter Rail and other Transitways: Northstar Commuter Rail is planned to enter service in 2009, and the Hiawatha Line will be extended to meet these trains at a new multi-modal station. The Hiawatha Line will also provide a seamless connection to the planned Cedar Avenue Busway which will serve a fast-developing suburban area south of the Minnesota River and connect with the LRT at the Mall of America.
- Taxis: This remains a work in progress. It's fair to say that we are not a taxi-oriented community. Further work is needed to coordinate municipal regulation, particularly location of taxi stands, with stations.
- Airport: Finally, strong integration of Hiawatha LRT with the Minneapolis-St. Paul International Airport (MSP).

Institutional Relationships: the Partnerships Formed in Order to Design, Build, and Finance the Hiawatha LRT Line, Especially the Airport Component

Many agencies had a stake in Hiawatha LRT and in its success in providing multimodal connections with Minneapolis-St. Paul International Airport:

- Metropolitan Airports Commission (MAC), owner and operator of the MSP.
- Hiawatha Project Office (HPO): representatives from Metropolitan Council; Metro Transit; Minnesota Department of Transportation (MnDOT); Minnesota Transit Constructors, the engineering company awarded the design-build contract; and various engineering consultants;
- Metropolitan Council, the state agency responsible for transportation and planning in the 7-county metropolitan area;
- Metro Transit, the transit operator, which is an agency of the Metropolitan Council;
- Minnesota Department of Transportation (MnDOT);

- Federal Aviation Administration (FAA);
- Federal Transit Administration (FTA);
- Federal Transportation Security Administration (TSA); and
- Hennepin County.

The Hiawatha Project Office was created to bring representatives of all involved state agencies under one roof. The spirit of the office structure was to foster a seamless or “boundary-less” culture with everyone’s focus on the success of the project. While the project office succeeded in establishing this cooperative spirit, people were physically removed from their home agencies. The challenge of maintaining professional relationships with peers and resolving conflicts when the project office and home agency disagreed were important issues at the time, and offered important lessons for future interagency projects.

Critical new working relationships needed to be developed and fostered elsewhere. MAC and HPO needed to assist each other in the LRT component at the airport. MAC insisted on responsibility for design and construction of the airport portion of the line, while assuring a timeline consistent with HPO’s overall responsibility to FTA to open the line by December 2004.

Likewise, the FAA and FTA needed to develop new working relationships. Both are part of the U.S. Department of Transportation, but, in my experience on this project, they operated quite independently of each other. They had developed different cultures over the years, but now had to deal with a project affecting both of them. Some massaging was necessary to create common language and timelines. The lessons learned should benefit future projects, as intermodalism will require agencies to adopt institutional cultures which foster seamless connections, rather than barriers.

Financial Contributions: the Stakeholders who Funded the Hiawatha LRT Line

The interagency cooperation needed to build the Hiawatha Line is reflected by the number of agencies who contributed to the capital costs (dollar values are in millions):

• FTA New Starts	\$334.3	46.7%
• FHWA and FTA Congestion Mitigation and Air Quality	49.8	7.0
• State of Minnesota Capital through Bonding Bill	100.0	14.0
• Minnesota Department of Transportation	20.1	2.8
• Metropolitan Airports Commission*	87.0	12.2
• Hennepin County Regional Railroad Authority	84.2	11.8
• FTA Formula Grant, MOA Property Donation, and Locally Funded Betterments	39.9	5.6
• Total	\$715.3	100.0

(*The Metropolitan Airports Commission’s share covered the cost of construction of the two stations and portion of the cost of the tunnel.)

Design and Construction Challenges of the Hiawatha LRT Line at the Airport

MAC insisted on control of the project at MSP due to the complexity of project, including building tunnels under two active runways, fear of disruption of airport operations, and a desire to fully integrate the project into the workings of the current airport and plans for the airport in the future.

MAC had a proven record and vast institutional experience in designing and constructing large infrastructure projects. MSP handled over 37,000,000 arriving and departing passengers in 2005 at two terminals; has four runways; contains a large maintenance facility for Northwest Airlines (NWA); provides facilities for the Minnesota Air National Guard; maintains large parking deck facilities; operates two tram systems to connect Lindbergh Terminal with parking and distant gates; and provides cargo facilities for carriers like FedEx and UPS.

Dialogue among the interested parties led to an agreement for a parallel effort where MAC would let its own contract and oversee LRT construction at the airport, while HPO awarded a contract for design and construction of the rest of the line.

MAC managed the acquisition of a tunnel boring machine from Europe. This machine bored two tubes, each 7,400 feet long. Cut-and-cover sections at the north and south portals make each tunnel 8,320 feet long, the longest tunnels in the state. The depth of the tunnels reaches 70 feet below grade, achieved for the site of the Lindbergh Terminal Station. The tunnels were bored and trains now operate under two active runways which handle the majority of the airport's takeoffs and landings. This approach eliminated surface transport conflicts with the LRT in and around the main terminal.

The Lindbergh LRT station is not directly under the terminal, a source of some controversy at the time of the decision. In the end, proximity to the terminal was balanced with cost, because of the expense that would be associated with moving a large concentration of existing utilities near the terminal. A convenient connection is provided to an internal airport tram that connects to the main entrance, the ground transportation hub, auxiliary Northwest Airlines check-in (including baggage) and other key elements of the airport. LRT passengers are as close to the terminal when arriving at the Lindbergh station as many people who arrive by car and park in an airport ramp. Moreover, three short escalator rides from the LRT station is an auxiliary Northwest Airlines check-in and security gate for passengers with only carry-on bags. I can say from personal experience, including my trip here last night, that for the business traveler or light traveler, it is extremely convenient.

As it turned out, the more remote location of the station, the depth of the tunnels, and the strength of materials used help protect the terminal and runways, and also enhanced the security of the airport, a heightened concern that arose part way into the design process.

Because security concerns were taken seriously from the outset, the line was able to proceed without major disruption.

The LRT connection at the airport's second terminal, the Humphrey Terminal, remains a work in progress, because of postponements to scheduled terminal improvements. Until those improvements are made, the above ground station will remain somewhat removed from the facility and require a "bit of a hike," as we say, some of which is outdoors. This is hardly a fatal drawback, but it does illustrate the complexity of keeping on track all the elements needed for intermodal success.

Hiawatha LRT: Ridership Figures and Trends

Overall, patronage of the Hiawatha Light Rail has exceeded forecasts since the full line opened in December 2004. In 2005, Hiawatha LRT carried 7.9 millions passengers, 58 percent above pre-construction estimates.

For the latest full month of operation, May 2006, the following figures were reported by Metro Transit:

Actual Ridership:	841,846
Forecast Ridership:	590,118

Actual ridership was 41 percent greater than forecast.

Long-term performance was even more encouraging. Average weekday ridership has consistently exceeded projections for the year 2020 and beyond.

Average Weekday (22 days):	29,307
Average Saturday (4 days):	25,739
Average Sunday/Holiday (5 days):	18,825

On an individual station basis, LRT passenger figures in August 2005 showed the Lindbergh Terminal station as the third-busiest on the line with 11.4 percent of the line's passengers boarding or disembarking there. This compares with the busiest station, Mall of America, at 13.6 percent, and second busiest, Nicollet Mall in downtown Minneapolis, at 13.5 percent. The average weekday patronage at the Lindbergh Terminal that month was 3,425.

Free rides between the two terminals, running 24 hours a day (the overall system runs 21 hours a day), have been a benefit to the airport, as the LRT service replaced a shuttle bus. The Metropolitan Airports Commission estimates the elimination of the shuttle bus saves it over \$1 million annually and reduces road usage on airport property.

LRT passengers at the airport can be described as belonging in one of the following categories:

- Airport employees: airline employees; vendors; and Transportation Security Administration employees. Many operations occur around the clock, so the LRT's 21-hours-a-day scheduling is a benefit to many of these workers;
- Travelers: out-of-town visitors as well as Twin Cities residents are discovering the convenience and affordability of the LRT (\$2 fare in rush hour to any stop on the line, and free transfer to other Metro Transit services, with riding privileges of 2.5 hours on one ticket). Shuttle buses and taxis are much more expensive. For example, the shuttle from MSP to downtown is \$14 one way; a cab ride is \$30. An issue which still needs to be addressed, in my estimation, is inadequate signage in the Lindbergh Terminal to inform arriving passengers of LRT service and directions to the station.
- Mall of America visitors: passengers with long layovers at the airport can make a trip to Mall of America for shopping or a meal within the 2.5- hour time limit of one LRT ticket. Travel time from Lindbergh Terminal to Mall of America is 11 minutes.
- Shuttle passengers between Lindbergh and Humphrey Terminals: some of these passengers are connecting between airlines, but most are airline or airport employees who park at the large parking facility adjacent to the Humphrey Terminal and ride the LRT to the Lindbergh Terminal.

A Case Study in Intermodalism: The Reflections Condominium Project at Bloomington Central Station

One of the visions Hiawatha LRT supporters embraced was the ability of the line to be a catalyst for economic development. A project that dramatically demonstrates this vision is the Reflections, a condominium complex under construction next to Bloomington Central Station, the first station south of the airport. From Bloomington Central, an LRT ride takes six minutes to Mall of America, six minutes to the Lindbergh Terminal, and 30 minutes to Nicollet Mall in the heart of downtown Minneapolis. Prior to Hiawatha's opening, there was no transit service in this part of the city of Bloomington.

Phase I of the Reflections development is a pair of 17-story glass tower condominiums. There are 275 units, with an average selling price of \$250,000. The developer, McGough, has dramatic plans for a mixed-used, transit-oriented development that, in their own estimation, increased in scope by more than 30 percent because of the presence of the LRT line. To enhance the connectivity of its development, McGough invested \$1 million of its funds in the LRT station and pathways leading to it. This is a dramatic testimonial to the power of the LRT to stimulate development supportive of intermodalism. It is an experience that is being repeated up and down the line.

Marketing of the Reflections condos emphasized directly the benefits of "the train at your front door" and the ease of traveling the Hiawatha Corridor. Sales to date reflect the importance of the Hiawatha Line, but it is the line and its connection to the airport that

has been the compelling factor for buyers. According to the marketing team at McGough, sales have been strong among three groups:

- Young professionals, ages 25-35, who travel often for business;
- Northwest Airlines pilots. While sales have been soft during the airline's bankruptcy and reorganization, this group has discovered the location to be ideal for airport access;
- Upper-income individuals and couples who want a residence in the Twin Cities while maintaining a residence elsewhere in the country.

McGough marketing people have expressed some surprise that the intermodal connection between LRT and the airport has been the driving force for so many of the sales, and that the development appeals to people across all age groups. The Reflections project has become a good case study of the positive power of intermodalism in the marketplace.

Four Key Lessons Regarding Intermodalism at Minneapolis-St. Paul International Airport

1. Connectivity is at the heart of successful intermodalism. It must be incorporated into all modes of transportation and other related areas of infrastructure investment if we are to take maximum advantage of our infrastructure investments.
2. It takes a lot of hard work at both the local and federal levels to achieve effective intermodalism. Locally we generated a spirit of teamwork and cooperation among MnDOT, Metropolitan Council, and Hennepin County and build relationships with (non-funding) the cities of Minneapolis and Bloomington. Federally, while the FTA and the FAA are both in the Transportation Department, they often speak different languages, have different cultures and procedures and their own lawyers to enforce them. The addition of heightened security concerns and another federal bureaucracy only adds to the complexity and the potential costs. Without strong, consistent leadership from the top across agencies, effective intermodalism will not be attained.
3. Integration of rail design into the airport master plan is critically important. My suggestion would be that airport renovation plans fully incorporate robust intermodal transit connections, even if no major investment is anticipated in the next few years. It is essential to keep open the possibility for these critical future connections. Just as we sometimes make sure a river crossing has sufficient capacity for future expansion or inclusion of rail, airports must do the same.
4. And finally, intermodalism is part of a broader set of policies affecting the pace, placement and type of development that occurs in a region. A robust intermodalism can reinforce the land use goals of the community and allow for

more intense and more efficient use of infrastructure. Transportation and growth strategies must be tied together. This strategy can produce big payoffs in avoided infrastructure costs and enhanced infrastructure effectiveness.

How the Key Lessons at the Airport Played Out on the Hiawatha LRT Line

1. Organizationally, control of LRT construction by the MAC on airport property gave MAC sufficient confidence to proceed. It assured the MAC of no down time for any of its operations and total control over the details of a complex construction project.
2. MAC's financial contribution to the Line produced real benefits to the airport, over a million dollars annually in savings on internal airport travel alone. It also avoided the twin threats of a non-airport agency under-designing elements critical to the success of the airport or, conversely, of the MAC gold-plating its request because it had no financial responsibility. Just as the FTA's firm budgetary number for the overall project imposed needed discipline, so too did the MAC's financial contribution. Splitting of contracts of this kind is not without its problems, but on balance, this arrangement proved very effective.
3. Security is yet another issue where control by MAC created significant advantages because of the fuller integration with its other security activities.

In summary, the lessons learned should benefit future projects. Effective intermodalism will require seamless transitions among agencies to the same degree that the physical systems provide seamless transitions among modes. Significant effort will be required to succeed but it will be well worth the price, now and into the future.